Data Management Plan for SEAC^{4}RS Airborne Field Study

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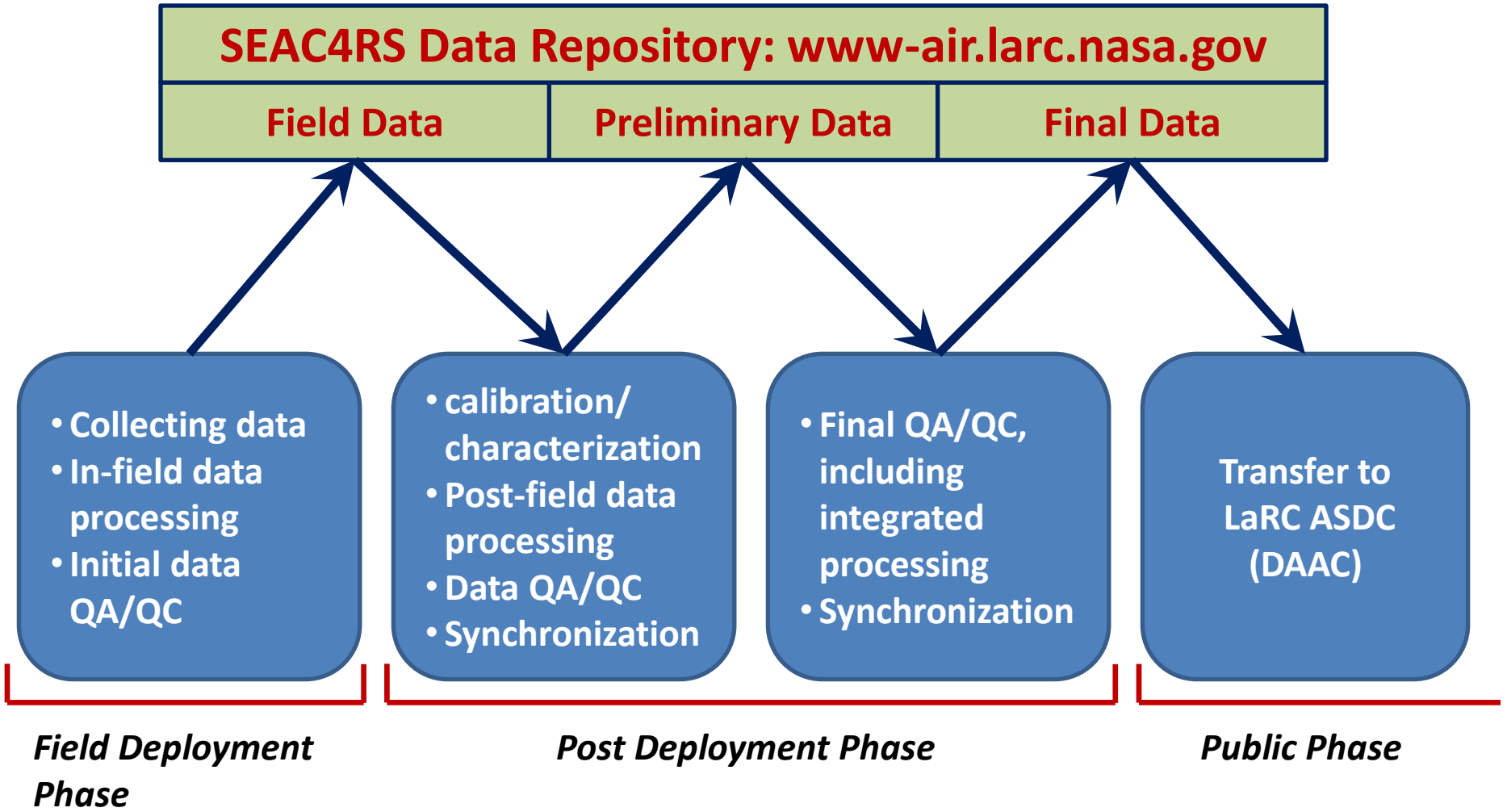
SEAC^{4}RS Data Flow Overview



The ER-2 satellite prototype instruments, i.e., AirMSPI, e-MAS, RSP (?), will archive data with DAAC directly.

Proposed SEAC^{4}RS Data Submission Deadline

Phase	Data Type	Deadline	Access Control
Field Deployment	Field Data	24 hours after each flight	Science teams and partners
Post-deployment	Preliminary Data	April 15, 2014	Science teams and partners
Public	Final Data	October 15, 2014	Public

- Exemptions to data submission deadlines may be granted on a case-by-case basis by project leadership
- Field and preliminary data may be obtained by groups outside of the SEAC^{4}RS community per request to project leadership
- Access control will be implemented through a single username and password.
- Data from prototype satellite instrument may not undergo the same cycle as others but will deliver the final data products by October 15, 2014.

SEAC^{4}RS Data Repositories

Data Repository	Operation Period
Field Data Archive	08/01/13 – 11/15/13
Preliminary Data Archive	11/16/13 – 10/15/14
Final Data Archive	10/15/14 –

- **The data repositories will hold data from NASA DC-8 and ER-2, SPEC Learjet, and SEAC^{4}RS surface-based observations as well as all project-funded model results, satellite data, meteorological forecasts, and back-trajectory calculations.**
- **Links will be provided for the relevant data sets.**
- **Preliminary and field data will be expunged after their operation periods, respectively.**
- **Data revisions will be tracked by revision numbers in filenames,**

Proposed SEAC^{4}RS Science Data Policy

All SEAC^{4}RS participants are requested to accept the following responsibilities:

- Submit data in ICARTT or HDF format no later than the specified deadlines
- If unexpected events lead to any delay in data submission, the PI is required to notify the project leadership as soon as issues are known
- **Final data should be submitted to the archive prior to any presentation at scientific conferences (e.g. AGU, AMS) or manuscript preparation, unless explicit authorization is obtained from the program managers**
- All aircraft measurements from a common platform should be synchronized to science team pre-agreed time standard, e.g. DLH for DC-8
- Consult with PIs when using their data in conference/data workshop presentations and/or manuscript
- Invite PIs of any data used to be co-authors (particularly during post-deployment research phase)
- PIs should be available to answer questions about their data

SEAC^{4}RS Data Format Requirement

- The data from SEAC^{4}RS field study will conform to data format standards endorsed by NASA ESDIS project: **ICARTT or HDF** format.
- All in-situ measurements are required to report data in ICARTT format. Detailed format description can be found at: http://www-air.larc.nasa.gov/missions/etc/IcarttDataFormat.htm.
- All incoming data files from in-situ measurements will be scanned to ensure compliance to the ICARTT format requirements.
- Assistance will be made available to the science team to trouble-shoot issues in generating ICARTT files.
- The remote sensing measurement instruments may report data in either HDF or ICARTT format.
- The ER-2 prototype satellite instrument data format will be determined through direct negotiation the assigned DAAC.

SEAC^{4}RS Data Reporting Requirement

- SEAC4RS Metadata Requirements:
  - The SEAC^{4}RS data files should be *self-describing* and the metadata requirements should be uniform for both ICARTT and HDF files.
  - The required metadata: variable definition, data information, measurement description, measurement uncertainty and detection limits. Details will be provided in the SEAC^{4}RS Data Management Plan.
- DataID Registration:
  - PI will need to register his/her dataID before file submission.
  - DataID is used to organize file on the data repository and is a part of the SEAC4RS file naming convention.
  - DataID is a typically short description of measured parameter/species, instrument, or model (e.g., SEAC4RS-O3).
  - The website will be open for DataID registration in early July, 2013 and detailed instruction will be distributed.

SEAC^{4}RS Data File Naming Convention

DataID_LocationID_YYYYMMDD_R#_Description.extension

- DataID: a short description of measured parameter/species, instrument, or model (e.g., SEAC4RS-O3).
- LocationID: an identifier of measurement platform: e.g. DC8 and ER2, will be provided on the website in a drop-down box.
- YYYYMMDD: UTC date when the flight take off or the beginning of the measurement for ground sites
- R#: Revision number. The revision number will be RA, RB, RC, … for field data and R0, R1, R2, … for the preliminary and final data. Note: archived files cannot be overwritten.
- Description: optional additional description of the file if necessary
- Extension: “ict” for ICARTT files, “h4” for HDF 4 files, and “h5” for HDF 5 files, etc.
- Examples: the filename for DC-8 diode laser spectrometer H2O measurement made on September 1, 2013 flight may be:

  SEAC4RS-DLH-H2O_DC8_20130901_RA.ICT (for field data)

  SEAC4RS-DLH-H2O_DC8_20130901_R0.ICT (for preliminary or final data)

- **Merge Data Products**

  The merge files will be generated for DC-8, and ER-2 and will be made available at the data repositories. The merge files will be updated as the data files are revised

- **Data Manager**

  The SEAC^{4}RS Data Manager will monitor the data submission status in accordance with the data submission timeline. The data manager will also coordinate the efforts to support implementation of ICARTT format and the production of the data merge files

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Additional Suggestions to Enhance SEAC^{4}RS Data Quality

- Data Synchronization standards:
  - DC8: DLH
  - ER-2: UAS Ozone (primary) or MMS (secondary)
- All aerosol extensive measurements are reported in STP (i.e., 273.15K and 1013 mb), including optical measurements
- For 1 sec files, specify the time stamp as start, mid, or stop time
- 1 sec files start and stop at the common take-off and landing time
- Cloud marker/flag? 1 sec. flag?

Additional Suggestions to Enhance SEAC^{4}RS Data Quality

- Use a standardized measurement variable naming convention (if applicable) for all platforms and measurements.

CommonName_Description_Instrument_Platform

For example:

NO2_MR_CLD_DC8: DC8 chemiluminescence detector NO2

NO2_MR_LIF_DC8: DC8 LIF NO2 measurement

NO2_MR_CLD_GV: GV chemiluminescence detector NO2

CN_gt10nm_CPC_D8: particle number density for diameter > 10 nm

A common name table is available and will be modified to fit SEAC^{4}RS observations

Questions, comments, advice?